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Docket No. AUS92001825US1 Serial No. 10/015,266 Atty: AJP

Applicant: BROWN ET AL

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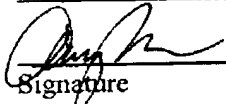
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Michael Wayne Brown, et al. <b>Serial No.: 10/015,266</b> Filed: 12/12/2001 Title: HOLD QUEUE WAIT ESTIMATES Atty Docket: AUS920010825US1	: Before the Examiner: : Marie C. Ubiles : Group Art Unit: 2642  : IBM Corporation (AP) : c/o Amy J. Pattillo : P.O. Box 161327 : Austin, Texas 78716
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TRANSMITTAL OF NOTICE OF APPEAL UNDER 37 CFR 1.192(a)


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Attached is Appellants' Brief, from a decision of the Examiner dated August 27, 2004 and an advisory action dated November 24, 2004, finally rejecting claims 1-5, 7-18, 20-26, 28-30, and 34-45.

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Respectfully submitted,

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Serial No. 10/015,266  
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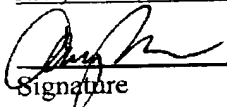
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Michael Wayne Brown, et al. <b>Serial No.: 10/015,266</b> Filed: 12/12/2001 Title: HOLD QUEUE WAIT ESTIMATES Atty Docket: AUS920010825US1	: Before the Examiner: : Marie C. Ubiles : Group Art Unit: 2642  : IBM Corporation (AP) : c/o Amy J. Pattillo : P.O. Box 161327 : Austin, Texas 78716
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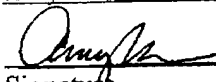
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of Michael Wayne Brown, et al. Serial No.: 10/015,266 Filed: 12/12/2001 Title: HOLD QUEUE WAIT ESTIMATES Atty Docket: AUS920010825US1	: Before the Examiner: : Marie C. Ubiles : Group Art Unit: 2642  : IBM Corporation (AP) : c/o Amy J. Pattillo : P.O. Box 161327 : Austin, Texas 78716
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**APPEAL BRIEF**

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This present Brief is submitted in triplicate in support of the Appeal in the above-referenced application pursuant to a Notice of Appeal filed November 29, 2004 as required by 37 C.F.R. 1.192. This is an appeal from a final rejection dated August 27, 2004 and an advisory action dated November 24, 2004 of Claims 1-5, 7-18, 20-26, 28-30, and 34-45 of application serial number 10/015,266, filed December 12, 2001.

**I. Real Party in Interest**

The real party in interest in the present application is the Assignee, International Business Machines Corporation of Armonk, New York, as evidenced by the Assignment set forth at Reel 012380, Frame 0906.

**II. Related Appeals and Interferences**

Related US Patent Application Serial No. 10/005,680 and related US Patent

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Application Serial No. 10/015,383 are concurrently pending appeal. There are no additional Appeals or Interferences known to Appellant, Appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal. No decisions have been rendered by a court or the Board in the related applications.

### **III. Status of Claims**

Claims 1-5, 7-18, 20-26, 28-30, and 34-45 are finally rejected and are being appealed; claims 31-33 are allowed. In particular, claims 1-5, 7-18, 20-26, 28-30, and 34-45 stand finally rejected as noted by the Examiner in the Examiner's Action dated August 27, 2004 and the Examiner's Advisory Action dated November 24, 2004. These rejected claims which form the basis of this appeal are reproduced in the attached Appendix.

### **IV. Status of Amendments**

A response after final office action was submitted on October 26, 2004 including amendments to claims 1, 14, 25, and 32 and newly added claims 37-45. Newly added claims 37-45 are dependent upon allowed claims 31-33. In the Advisory Action, dated November 24, 2004, following the response after final office action, the Examiner entered the amendments after final for purposes of appeal. The Advisory Action sets the status of the claims, for purposes of appeal, to claims 31-33 allowed and claims 1-32 and 34-45 rejected.

### **V. Summary of Claimed Subject Matter**

#### *Claims 1, 14 and 25*

Claim 1 discloses a method for estimating and publishing a caller's remaining wait time in a call hold queue of a call center (Specification, page 8, lines 3-5, Figures 2 and 3, element 42, Figure 5, element 82). In particular, a call center receives multiple calls, where each caller associated with each of the multiple calls is identified by an authenticated caller identifier (Specification, page 8, lines 19-21, page 18, lines 20-26, page 24, lines 12-13, page 25, lines 2-5, Figure 6, Figure 7, element 132). The call center

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then retrieves a caller profile associated with each authenticated caller identifier, where each caller profile indicates a previous call center usage history for that caller (Specification, page 8, lines 19-26; page 29, lines 19-27, Figure 3, element 68, Figure 8, elements 146, 148, and 150). The call center estimates call times for each call currently within the call center based on each caller's previous call center usage history (Specification, page 36, line 28 through page 37, line 11, Figure 5, element 84). The call center positions a particular call within a hold queue and estimates a wait time in the hold queue for the particular call according to the call times individually estimated for the multiple calls currently within the call center (Specification, page 4, lines 20-23; page 29, lines 11-17, page 29, line 29 through page 30, line 6, page 30, line 29 through page 31, line 2, page 34, line 25 through page 36, line 26, Figure 5, element 84, Figure 8, elements 144 and 160). In publishing the estimated wait time, the call center adjusts a selection of an output interface to which the wait time is output based on an amount of time remaining in the estimated wait time (Specification, page 9, lines 2-10, page 26, lines 9-20; page 27, lines 7-24, page 32, lines 12-20, Figure 4, element 80, Figure 8, elements 166 and 168).

Claim 14 discloses a system with means for performing the elements described in claim 1. In particular, Figure 2 illustrates a call center 16 that includes a hold queue 70 in hold system 42 with means for performing the elements described in claim 1 (Specification, page 25, lines 10). On hold system 42 accesses caller profiles from caller profile server 50 of Figure 2 or from data storage system 62 of Figure 3 (Specification, page 27, lines 2-5).

Claim 25 discloses a computer program product for performing the steps described in claim 1. In particular, the specification describes that while the invention is described with reference to a data processing system, the computer readable medium of Claim 25 is taught where the recordings, which are the means for performing the elements of claim 1, can all be distributed through a "computer readable medium of instructions and a variety of forms" (Specification, page 43, lines 10-18). Examples of a recording medium include:

"recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMS, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless

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communications links using transmission forms, such as, for example, radio frequency and light wave transmissions" (Specification, page 43, lines 18-23).

In addition, the recording medium may "take the form of coded formats that are decoded for actual use in a particular data processing system" (Specification, page 43, lines 23-26).

#### *Claim 12*

Claims 12 discloses a method for estimating wait times at a call center. (Specification, page 8, lines 3-5). A call center receives multiple calls identified by authenticated caller identifiers (Specification, page 8, lines 19-21, page 18, lines 20-26, page 24, lines 12-13, page 25, lines 2-5, Figure 6, Figure 7, element 132). The call center also receives multiple caller profiles associated with the authenticated caller identifiers, where each caller profile includes a time average for each caller while previously on hold at at least one call center (Specification, page 8, lines 19-26; page 29, lines 19-27, page 34, lines 22-27, Figure 2, element 50, Figure 3, element 68, Figure 8, elements 146, 148, and 150). The call center then estimates a wait time for a particular caller from among the multiple callers waiting in a hold queue of the call center according to the time averages for the other callers (Specification, page 4, lines 20-23; page 29, lines 11-17, page 29, line 29 through page 30, line 6, page 30, line 29 through page 31, line 2, page 34, line 25 through page 36, line 26, Figure 5, element 84, Figure 8, elements 144 and 160).

#### *Claims 37-43*

Claim 37 disclose a method for monitoring on hold characteristics at a caller profile server where each caller is identified by a single authenticated caller identifier across multiple call centers, where the authenticated caller identifier comprises an identifier for the device which compares a current voice sample provided by the caller with a previously stored voice sample for said caller to authenticate an identity of said caller" (Specification, page 17, lines 28 through page 18, line 26 and page 19, lines 3-6 and 19-30). Claim 38 discloses a method for monitoring on hold characteristics and computing on hold statistics for a caller at a caller profile server, where the on hold

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statistics specify on hold activity statistics of a caller accumulated from participation in on hold activities comprising at least one from among idleness, participation in surveys, participation in competitions, listening to music, and accessing a third party service (Specification, page 35, lines 14-20, Figure 5, element 84). Claim 39 discloses a method for monitoring on hold characteristics and responding to requests received at the caller profile server for caller profiles including on hold characteristics, where requests are received with a authenticated caller identifier at the caller profile server via a media gateway, the caller profile server is accessible within an internet based network that interfaces with multiple call centers which are accessible within a telephony network through a media gateway, wherein the media gateway supports multiple protocols for communication between the internet based network and the telephony network” (Specification, page 11, line 21 through page 12, line 28, page 15, line 15 through page 16, line 6, Figure 1, elements 10, 14, 22, 24, 26).

In addition, claims 40, 41, and 42 disclose a system with means for performing the elements of claims 37, 38, and 39. In particular, the present invention includes a caller profile server with means for performing the elements of claims 37, 38, and 39, where the caller profile server is accessible to multiple call centers via a telephony network or via an internet based network through a media gateway (Specification, page 26, line 22 through page 27, line 5, page 27 line 26 through page 28 line 7).

Further, claims 43, 44, and 45 disclose a computer program product for performing the steps described in claims 37, 38, and 39. In particular, the specification describes that while the invention is described with reference to a data processing system, the computer readable medium of claims 37, 38, and 39 is taught where the recordings, which are the means for performing the elements of claim 1, can all be distributed through a “computer readable medium of instructions and a variety of forms” (Specification, page 43, lines 10-18). Examples of a recording medium include:

“recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMS, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions” (Specification, page 43, lines 18-23).

In addition, the recording medium may “take the form of coded formats that are decoded



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for actual use in a particular data processing system” (Specification, page 43, lines 23-26).

#### **VI. Grounds of Rejection to be Reviewed on Appeal**

1. Claims 1-5, 7-18, 20-26, 28-30, and 34-36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shtivelman (US Patent Number 6,157,655) in view of Duncan et al. (US Patent Publication Number 2002/0141561) and further in view of Barber et al. (US Patent Number 6,088,435).

2. Claims 37-45 stand rejected because the claims raise new issues that would require further consideration and search, but are dependent upon allowed claims 31-33.

#### **VII. Argument**

##### **1. 35 U.S.C. 103(a), Alleged Obviousness, Claims 1-5, 7-18, 20-26, 28-30, and 34-36**

##### **Claims 1-5, 7-11, 14-18, 20-26, 28-30 and 34-36**

The Final Office Action rejects claims 1, 14 and 25 under 35 U.S.C. 103(a) as being allegedly unpatentable over Shtivelman (US Patent Number 6,157,655) in view of Duncan et al. (US Patent Publication Number 2002/0141561) and further in view of Barber et al. (US Patent Number 6,088,435). [Final Office Action, dated August 27, 2004, pp. 2, 6] In addition, in an Advisory Action, the Examiner rejects claims 1, 14, and 25, as amended after the Final Office Action, as adding new issues that would require additional consideration and search from the Examiner. The rejections are respectfully traversed.

Independent method claim 1, which is representative of independent system claim 14 and independent computer program product claim 25, with regard to similarly recited subject matter, reads as follows:

1. **(Currently Amended)** A method for estimating wait times within a hold queue comprising:  
receiving a plurality of calls at a call center, wherein each caller associated with a call from among said plurality of calls is identified by an authenticated caller identifier;

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retrieving, for each caller according to said authenticated caller identifier, a caller profile from among a plurality of caller profiles, wherein each of said plurality of caller profiles indicates a previous call center usage history for each said caller;

estimating a plurality of call times individually for each of said plurality of calls within a call center based on said previous call center usage history for each said caller;

positioning a particular call received from a particular caller at said call center within a hold queue;

estimating a wait time in said hold queue for said particular call according to said plurality of call times individually estimated for said plurality of calls within said call center; and

adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and at a second amount of time remaining in said wait time said wait time is output to a second output interface. (underlining indicates amendment after final office action).

The Examiner carries the burden of proving a prima facie case of obviousness for a 103(a) rejection. In particular, in establishing a prima facie case of obviousness under 103(a), the combined prior art references must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.3d 488, 20 USPQ2d 1438 (Fed Cir. 1991). Appellants respectfully assert that the Examiner does not show and the references do not teach or suggest, separately or in combination, estimating a plurality of call times individually for each of said plurality of calls within a call center based on said previous call center usage history for each said caller or adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and at a second amount of time remaining in said wait time said wait time is output to a second output interface.

In particular, in the final office action, the Examiner rejects the elements of Claims 1-5, 7-11, 14-18, 20-26, 28-30 and 34-36 under 35 U.S.C. § 103(a) as being unpatentable over Shtivelman (US Patent Number 6,157,655) in view of Duncan et al. (US Patent Publication Number 2002/0141561) and further in view of Barber et al. (US Patent Number 6,088,435). [Final Office Action, p. 2] In particular, the Examiner cites Shtivelman as teaching the elements of “estimating a plurality of call times individually for each of said plurality of calls within a call center”, “positioning a particular call

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received from a particular caller at said call center within a hold queue”, and “estimating a wait time in said hold queue for said particular call according to said plurality of call time individually estimated for said plurality of calls within said call center.” [Final Office Action, pp. 2-3] The Examiner cites Shivelman’s system as lacking teachings of the other elements of claims 1, 14, and 25 of “receiving said plurality of calls at a call center, wherein each call associated with a call from among said plurality of calls is identified by an authenticated caller identifier”, “retrieving, for each caller according to said authenticated caller identifier, a caller profile from among a plurality of caller profiles, wherein each of said plurality of caller profiles indicates a previous call center usage history for each said caller”, and wherein estimating a plurality of call times “is based on said previous call center usage history for each user.” [Final Office Action, p. 3] However, in the rejection of claims 1, 14, and 25, the Examiner cites the teachings of Duncan et al. in paragraphs 0017, 0021, lines 5-10, and 0036 lines 1-4, which read as follows:

“The call evaluation submodule uses algorithms and models provided by a modeling module that analyzes inbound call histories to forecast outcomes of pending incoming calls. It utilizes the forecasts to compute priority values. For example, in the modeling module, performing logistic regression on prior inbound calls using caller and/or call information and prior call history as independent (or predictive) variables and a dependent variable of caller attrition, provides a model that forecasts pending inbound caller attrition based on the caller and/or call information. Alternatively, performing linear regression modeling on prior inbound calls, using caller and/or call information as independent (or predictive) variables and a dependent variable of connect time, provides a model that forecasts the expected agent talk time for each incoming call. [...]  
Incoming calls accepted by a call receiving device, such as an ACD or VRU, provide calling information, such as DNIS information or account information provided by the caller, to allow evaluation of the value of the customer, such as an estimation of probable future customer behavior. [...]  
Inbound telephone call receiving device 20 accepts inbound telephone calls through interface 22 and obtains caller information associated with the inbound calls such as ANI or DNIS information. When receiving device 20 includes a VRU, additional caller information, such as account information, is obtained through automated interaction with the inbound callers.” [Final Office Action, pp. 3-4]

The Examiner also cites Barber et al. as teaching a record stored in association with a subscriber identifier. [Final Office Action, p. 4] Then, the Examiner concludes that: “it

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would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Shtivelman's system by adding the features of caller prior call history retrieval based on ANI, DNIS, or account information and use a described caller prior call history to estimate a wait time of a caller" to "provide a system that will allow agents to respond to customers that are more sensitive to holding time before responding to customers who are less sensitive to holding time." [Final Office Action, pp. 4-5]

First, Shtivelman and Barber et al. lack the teaching of claim 1 of estimating call times individually for each call based on the previous call center usage history for each caller. In the only reference cited by the Examiner related to the estimation of time, Duncan et al., in paragraph 0017, teaches:

"Alternatively, performing linear regression modeling on prior inbound calls, using caller and/or call information as independent (or predictive) variables and a dependent variable of connect time, provides a model that forecasts the expected agent talk time for each incoming call."

Thus, Duncan teaches using a prior inbound call history to build a model for forecasting the expected agent talk time for each incoming call, which the Examiner equates to teaching "use of the caller prior call history to estimate a wait time of a caller (or estimation of probable customer behavior)." [see Final Office Action, pp. 4-5]

Forecasting an expected agent talk time for each incoming call based on a forecasting model, however, does not teach or suggest estimating an individual call time for each current caller based on the actual previous call center usage history of each caller. In particular, in determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983).

Appellants assert that when viewed as a whole, Duncan et al. teaches a system for forecasting outcomes of pending income calls that depends on forecasted outcomes and queue based performance which teaches away from estimating the call time of each caller based on the previous call center usage history of the actual callers currently received at the call center. In particular, Duncan et al. teaches a system for forecasting outcomes of pending incoming calls, where an outcome is focused on whether the caller is predicted

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to place and order, and then prioritizing calls in the hold queue for response by agents based on the anticipated outcome (Duncan et al., paragraphs 0011, 0012, and 0021).

Paragraph 0023 of the specification of Duncan et al. highlights that

“an important technical advantage of the present invention is that forecasted outcomes are available with minimal caller information. Generally the identity and purpose of inbound calls are difficult to discern because little information is available regarding the inbound caller. The use of statistical analysis of historical inbound calling data allows accurate modeling of outcomes with minimal knowledge of the identity and purpose of the inbound caller.”

Thus, in the Duncan et al. system, because identifying the caller is cited as the problem, the advantage or solution of Duncan et al. is modeling and forecasting using statistical analysis of historical inbound call information without knowledge of current inbound callers, rather than making estimates of call times based on the call center histories of current callers to the call centers. Duncan et al. does not teach estimating individual call times for each caller based on individual call histories for each caller. In contrast, the claimed invention teaches receiving authenticated caller identifiers with each call and accessing caller profiles with previous call center usage for each authenticated caller identity, and then estimating call times for each caller based on the caller's previous call center usage.

In addition, Appellants assert that when viewed as a whole, it would not have been obvious for a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Shtivelman and Duncan et al., because both Shtivelman and Duncan et al. specifically teach away from estimating call center usage based on retrieved individual call histories for each of the callers in the call center. First, when viewed as a whole, the claimed invention teaches first estimating individual call times for each caller with a call at the call center based on each caller's previous call center usage history and then estimating the hold time for another caller based on the estimated call times for other current callers. The Examiner relies on Duncan et al. to teach the first step, however, even if Duncan et al. teaches estimating a call time, that call time is based on forecasted models, not based on individual previous call center usage history of other callers with calls within the call center as taught by the claimed invention. Then, because Duncan et al. teaches away from estimating call times based on

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the previous call center usage history of current callers, modifying the Shtivelman system that estimates wait times based on the performance of the hold queue and its representatives with the system of Duncan et al. that teaches the advantage of using forecasted outcomes, would not teach estimating the hold time for a particular call in the hold queue according to the call times individually estimated for the other calls within the call center; neither Shtivelman nor Duncan et al. suggest a system where estimated wait times are based on retrieved individual call histories for each other caller in the call center.

In conclusion, Appellants urge that Duncan et al. fails to teach or suggest estimating a call time individually for each caller based on the previous call center usage history of each caller. A prima facie case of obviousness under 103(a) is not established for claims 1, 14, and 25 because the combined references of Shtivelman, Duncan et al. and Barber et al. fail to teach or suggest at least one element in claims 1, 14, and 25. Because a prima facie case of obviousness under 103(a) is not established for the claims 1, 14, and 25, Appellants respectfully request allowance of claims 1, 14, and 25.

Second, Appellants note that even if Shtivelman, Duncan et al., and Barber et al. teach the elements of claims 1, 14, and 25, as rejected by the Examiner in the final office action, amended claims 1, 14, and 25 also teach the element of adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and at a second amount of time remaining in said wait time said wait time is output to a second output interface. None of Shtivelman, Duncan et al. and Barber et al. teach adjusting the selection of an output interface to which the wait time is output based on the amount of time remaining in the wait time. Therefore, a prima facie case of obviousness under 103(a) is not established for claims 1, 14, and 25 because the combined references of Shtivelman, Duncan et al. and Barber et al. fail to teach or suggest at least one element in each of claims 1, 14, and 25. Because a prima facie case of obviousness under 103(a) is not established for claims 1, 14, and 25, Appellants respectfully request allowance of the claims 1, 14, and 25.

Because prima facie obviousness is not established for claims 1, 14, and 25, at least by virtue of their dependency on claims 1, 14, and 25, neither Shtivelman, Duncan

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et al., nor Barber et al., either alone or in combination, teaches or suggests the features of dependent claims 2-5, 7-11, 15-18, 20-24, 26, 28-30 and 34-36 under 35 U.S.C. §103(a).

### Claims 12 and 13

The Final Office Action rejects claim 12 under 35 U.S.C. 103(a) as being allegedly unpatentable over Shtivelman (US Patent Number 6,157,655) in view of Duncan et al. (US Patent Publication Number 2002/0141561) and further in view of Barber et al. (US Patent Number 6,088,435). [Final Office Action, dated August 27, 2004, p. 6] The rejection is respectfully traversed.

Independent method claim 12 reads as follows:

12. A method for estimating wait times at a call center, comprising:  
receiving a plurality of calls identified by a plurality of  
authenticated caller identifiers at a call center;  
receiving a plurality of caller profiles associated with said plurality  
of authenticated caller identifiers, wherein said plurality of caller profiles  
comprise time averages for said plurality of callers while previously on  
hold at at least one call center; and  
estimating a wait time for a particular caller waiting in a hold  
queue from among said plurality of callers according to said time averages  
for said plurality of callers.

The Examiner carries the burden of proving a prima facie case of obviousness for a 103(a) rejection. In particular, in establishing a prima facie case of obviousness under 103(a), the combined prior art references must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.3d 488, 20 USPQ2d 1438 (Fed Cir. 1991). Appellants respectfully assert that the Examiner does not show and the references do not teach or suggest, separately or in combination, the elements of receiving a plurality of caller profiles associated with said plurality of authenticated caller identifier, wherein said plurality of caller profiles comprise time averages for said plurality of callers while previously on hold at at least one call center and estimating a wait time for a particular caller waiting in a hold queue from among said plurality of callers according to said time averages for said plurality of callers

In particular, in the final office action, claims 12 is rejected for the same reasons as claim 1, where claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable

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over Shtivelman (US Patent Number 6,157,655) in view of Duncan et al. (US Patent Publication Number 2002/0141561) and further in view of Barber et al. (US Patent Number 6,088,435). [Final Office Action, p. 6] In merely rejecting claim 12 for the same reasons as claim 1, however, the Examiner fails to prove a prima facie case of obviousness for a 103(a) rejection because the Examiner does not point out how Shtivelman in view of Duncan et al. and Barber et al. teach each of the elements of claim 12, and, in particular does not point to the teachings of Shtivelman in view of Duncan et al. and Barber et al. for the elements of “receiving a plurality of caller profiles associated with said plurality of authenticated caller identifier, wherein said plurality of caller profiles comprise time averages for said plurality of callers while previously on hold at at least one call center” and “estimating a wait time for a particular caller waiting in a hold queue from among said plurality of callers according to said time averages for said plurality of callers.”

First, Shtivelman in view of Duncan et al. and Barber et al. does not teach receiving a plurality of caller profiles associated with said plurality of authenticated caller identifiers, wherein said plurality of caller profiles comprise time averages for said plurality of callers while previously on hold at at least one call center. As previously described, with reference to claim 1, Duncan et al. teaches a model for forecasting agent call times for calls, where the forecasts are based on performing linear regression modeling on prior inbound calls (Duncan et al., paragraph 0017). Paragraph 0018 of Duncan et al. gives specific examples of types of “predictive variables for the logistic and linear regressions equations” as “call information such as the originating number or exchange, the originating location, the dialed number, the time of day, and the likely purpose of the call”, “account information derived from association of the originating number and an account data base, or derived from data input by the inbound caller by a VRU”, and “demographic information that may be associated with the call and/or caller”. Thus, Duncan et al. teaches a forecasting system that calculates models and forecasts outcomes and agent wait times based on statistical analysis generated from prior inbound calls, but does not teach or suggest calculating time averages of previous hold times on a caller by caller basis, storing time averages of previous hold times on a caller by caller basis or receiving caller profiles with already calculated time averages per caller based on



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each caller's previous hold times. In contrast, claim 12 teaches receiving caller profiles with already calculated time averages per caller, for callers previously on hold at call centers.

Second, Shtivelman in view of Duncan et al. and Barber et al. does not teach estimating a wait time for a particular caller waiting in a hold queue from among said plurality of callers according to said time averages for said plurality of callers. Shtivelman teaches estimating a wait time for a particular caller according to hold queue statistical factors, such as the average time per representative over time (Shtivelman, col. 4, lines 37-48). Shtivelman does not teach estimating a wait time for a particular caller according to time averages of other callers from previous hold times, where the time averages are from previous hold times at at least one call center. In addition, Duncan et al. teaches estimating agent call times based on modeling forecasts (Duncan et al., paragraph 0017); Duncan et al. does not teach estimating a wait time or agent call time based on the already calculated time averages for previous wait times of other callers as accessed from other caller profiles.

Third, Appellants assert that when viewed as a whole, it would not have been obvious for a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Shtivelman and Duncan et al., because both Shtivelman and Duncan et al. specifically teach away from estimating a wait time for a particular caller in a hold queue based on retrieved individual call histories for each of the other callers in the call center. Duncan et al. teaches away from a current caller history based estimated because it teaches estimating a call time based on forecasted models, not based on individually averaged usage of each other caller within the call center as taught by the claimed invention. (Duncan et al., paragraph 0023). Then, because Duncan et al. teaches away from estimating call times based on the time averages of each of the other callers, modifying the Shtivelman system that estimates wait times based on the performance of the hold queue and its representatives with the system of Duncan et al. that teaches the advantage of using forecasted outcomes, would not teach estimating the wait time for a particular call in the hold queue according to the individual averaged wait times for the other callers within the call center; neither Shtivelman nor Duncan et al.

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suggest a system where estimated wait times are based on retrieved individual time averages for each other caller in the call center.

In conclusion, Shtivelman in view of Duncan et al. and Barber et al. do not teach at least one element of claim 12 from among the receiving step and the estimating step. Therefore, a prima facie case of obviousness under 103(a) is not established for claim 12 because the combined references of Shtivelman, Duncan et al. and Barber et al. do not teach or suggest all of the claim limitations. Because a prima facie case of obviousness under 103(a) is not established for claim 12, Appellants respectfully request allowance of claim 12. In addition, because prima facie obviousness is not established for claim 12, at least by virtue of its dependency on claim 12, neither Shtivelman, Duncan et al., nor Barber et al., either alone or in combination, teaches or suggests the features of dependent claims 13 under 35 U.S.C. §103(a).

**2. Rejected For Raising New Issues that would require further consideration and search, claims 37-45**

In an amendment after final, Appellants submitted additional dependent claims 37-45, which are dependent upon allowed claims 31-33. [Applicants' Response to Final Office Action, dated October 26, 2004, pp. 15-19] In the Advisory Action, the Examiner declined to enter the proposed amendments because they raise new issues that would require further consideration and/or search by the Examiner. The Examiner entered, but rejected newly added claims 37-45 for purposes of Appeal. [Advisory Action, p. 1] In an attached note to the Advisory Action, the Examiner specifies the grounds for rejection that "The Applicant introduced new issues in claims 1, 14, 25, and 37-45 that require further consideration and search from the Examiner."

First, Appellants assert that dependent claims 37-45 are dependent upon allowed claims 31-33 and therefore request allowance of these claims which are dependent upon allowable subject matter.

Second, Appellants note that dependent claims 37-45 have proper antecedent basis in the specification, as stated in the final office action, and request allowance of these dependent claims which are properly supported by the specification. In particular,

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claims 37, 40, and 43 include the teaching that the "authenticated caller identifier comprises an identifier for a device which compares a current voice sample provided by the caller with a previously stored voice sample for said caller to authenticate an identity of said caller" which among multiple teachings, finds basis in the specification on page 17, lines 28 through page 18, line 26 and page 19, lines 3-6 and 19-30. Claims 38, 41, and 44 include the teaching that "on hold statistics specify on hold activity statistics of a caller accumulated from participation in on hold activities comprising at least one from among idleness, participation in surveys, participation in competitions, listening to music, and accessing a third party service" which among multiple teachings, finds basis in the specification on page 35, lines 14-20. Claims 39, 42, and 45 include the teaching of "receiving said request for said caller profile according to said authenticated caller identifier at said caller profile server via a media gateway, wherein said caller profile server is accessible within an internet based network that interfaces with said plurality of call centers which are accessible within a telephony network through said media gateway, wherein said media gateway supports a plurality of protocols for communication between said internet based network and said telephony network" which among multiple teachings, finds basis in the specification on page 15, line 15 through page 16, line 6.

In conclusion, Appellants assert that while dependent claims 37-45 may raise new issues, the claims are dependent upon allowed claims and are well supported in the specification, and therefore request allowance of these claims.

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**CONCLUSION**

It is therefore respectfully requested that the Examiner's rejection of claims 1-5, 7-18, 20-26, 28-30, and 34-36 under 35 USC 103(a) be reversed. In addition, it is therefore respectfully requested that the Examiner's rejection of claims 37-45 as raising new issues, even though claims 37-45 are dependent upon allowed claims 31-31, be reversed. It is respectfully submitted that the pending claims are patentable under 35 USC 103(a) and as dependent claims of allowed independent claims and allowance of these claims is respectfully requested.

Please charge the fee of \$500.00 for submission of a Brief in Support of Appeal to IBM Corporation Deposit Account No. 09-0447. No additional filing fee is believed to be necessary; however, in the event that any additional fee is required, please charge it to IBM Corporation Deposit Account No. 09-0447.

Respectfully submitted,



ON 1/21/2005

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### VIII. Claims Appendix

1. A method for estimating wait times within a hold queue comprising:

receiving a plurality of calls at a call center, wherein each caller associated with a call from among said plurality of calls is identified by an authenticated caller identifier;

retrieving, for each caller according to said authenticated caller identifier, a caller profile from among a plurality of caller profiles, wherein each of said plurality of caller profiles indicates a previous call center usage history for each said caller;

estimating a plurality of call times individually for each of said plurality of calls within a call center based on said previous call center usage history for each said caller;

positioning a particular call received from a particular caller at said call center within a hold queue;

estimating a wait time in said hold queue for said particular call according to said plurality of call times individually estimated for said plurality of calls within said call center; and

adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and at a second amount of time remaining in said wait time said wait time is output to a second output interface.

2. The method for estimating wait times within a hold queue according to claim 1, wherein estimating a plurality of call times further comprises:

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estimating said plurality of call times according to at least one from among an average time per representative, an average time per caller, and an activity participated in by a selection of said plurality of callers waiting in said hold queue.

3. The method for estimating wait times within a hold queue according to claim 2, wherein said average time per representative is further specified according to at least one from among a time of day and a subject.
4. The method for estimating wait times within a hold queue according to claim 2, wherein said average time per caller is further specified according to at least one from among an average time with representatives across a plurality of call centers, an average time with a particular representative, an average time for a subject, and an average time of a total call within said call center.
5. The method for estimating wait times within a hold queue according to claim 2, wherein said activity participated in by a selection of said plurality of callers comprises at least one from among a third party call, a competition, a survey, an expert session, and an entertainment service.
6. Cancelled.
7. The method for estimating wait times within a hold queue according to claim 1, further comprising:  
  
publishing said wait time to an interface selected by said caller.
8. The method for estimating wait times within a hold queue according to claim 7, wherein publishing said wait time further comprises:  
  
publishing a plurality of criteria utilized to estimated said plurality of call times.

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9. The method for estimating wait times within a hold queue according to claim 1, wherein a selection of said plurality of calls are currently waiting in said hold queue.

10. The method for estimating wait times within a hold queue according to claim 1, wherein a selection of said plurality of calls are currently being assisted by a plurality of representatives within said call center.

11. The method for estimating wait times within a hold queue according to claim 1, further comprising:

updating a caller profile server according to a session for said particular call according to said authenticated identifier for said particular caller, wherein said caller profile server maintains a plurality of caller profiles stored according to a plurality of authenticated identifiers for compiling information about sessions at at least one call center.

12. A method for estimating wait times at a call center, comprising:

receiving a plurality of calls identified by a plurality of authenticated caller identifiers at a call center;

receiving a plurality of caller profiles associated with said plurality of authenticated caller identifiers, wherein said plurality of caller profiles comprise time averages for said plurality of callers while previously on hold at at least one call center; and

estimating a wait time for a particular caller waiting in a hold queue from among said plurality of callers according to said time averages for said plurality of callers.

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13. The method for estimating wait times at a call center according to claim 12, wherein said plurality of caller profiles are received from at least one profile server, wherein said at least one profile server is accessible to a plurality of call centers.

14. A system for estimating wait times within a hold queue, comprising:

a call center for receiving a plurality of calls;

means for receiving a plurality of calls at a call center, wherein each caller associated with a call from among said plurality of calls is identified by an authenticated caller identifier;

means for retrieving, for each caller according to said authenticated caller identifier, a caller profile from among a plurality of caller profiles, wherein each of said plurality of caller profiles indicates a previous call center usage history for each said caller;

means for estimating a plurality of call times individually for each of said plurality of calls within a call center based on said previous call center usage history for each said caller;

means for positioning a particular call received from a particular caller at said call center within a hold queue; and

means for estimating a wait time in said hold queue for said particular call according to said plurality of call times individually estimated for said plurality of calls within said call center; and

means for adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and



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at a second amount of time remaining in said wait time said wait time is output to a second output interface.

15. The system for estimating wait times within a hold queue according to claim 14, wherein said means for estimating a plurality of call times further comprises:

means for estimating said plurality of call times according to at least one from among an average time per representative, an average time per caller, and an activity participated in by a selection of said plurality of callers waiting in said hold queue.

16. The system for estimating wait times within a hold queue according to claim 15, wherein said average time per representative is further specified according to at least one from among a time of day and a subject.

17. The system for estimating wait times within a hold queue according to claim 15, wherein said average time per caller is further specified according to at least one from among an average time with representatives across a plurality of call centers, an average time with a particular representative, an average time for a subject, and an average time of a total call within said call center.

18. The system for estimating wait times within a hold queue according to claim 15, wherein said activity participated in by a selection of said plurality of callers comprises at least one from among a third party call, a competition, a survey, an expert session, and an entertainment service.

19. Cancelled

20. The system for estimating wait times within a hold queue according to claim 14, further comprising:

means for publishing said wait time to an interface selected by said caller.

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21. The system for estimating wait times within a hold queue according to claim 20, wherein said means for publishing said wait time further comprises:

means for publishing a plurality of criteria utilized to estimate said plurality of call times.

22. The system for estimating wait times within a hold queue according to claim 14, wherein a selection of said plurality of calls are currently waiting in said hold queue.

23. The system for estimating wait times within a hold queue according to claim 14, wherein a selection of said plurality of calls are currently being assisted by a plurality of representatives within said call center.

24. The system for estimating wait times within a hold queue according to claim 14, further comprising:

means for updating at least one caller profile server according to a session for said particular call according to said authenticated identifier for said particular caller, wherein said at least one caller profile server maintains a plurality of caller profiles stored according to a plurality of authenticated identifiers for compiling information about sessions at at least one call center.

25. A computer program product for estimating wait times within a hold queue, said computer program product comprising:

a recording medium;

means, recorded on said recording medium, for receiving a plurality of calls at a call center, wherein each caller associated with a call from among said plurality of calls is identified by an authenticated caller identifier;

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means, recorded on said recording medium, for retrieving, for each caller according to said authenticated caller identifier, a caller profile from among a plurality of caller profiles, wherein each of said plurality of caller profiles indicates a previous call center usage history for each said caller;

means, recorded on said recording medium, for estimating a plurality of call times individually for each of said plurality of calls based on said previous call center usage history for each said caller;

means, recorded on said recording medium, for positioning a particular call received from a particular caller at said call center within a hold queue; and

means, recorded on said recording medium, for estimating a wait time in said hold queue for said particular call according to said plurality of call times individually estimated for said plurality of calls within said call center; and

means, recorded on said recording medium, adjusting a selection of an output interface to which said wait time is output based on an amount of time remaining in said wait time, wherein at a first amount of time remaining in said wait time said wait time is output to a first output interface and at a second amount of time remaining in said wait time said wait time is output to a second output interface.

26. The computer program product for estimating wait times within a hold queue according to claim 25, wherein said means for estimating a plurality of call times further comprise:

means, recorded on said recording medium, for estimating said plurality of call times according to at least one from among an average time per representative, an average time per caller, and an activity participated in by a selection of said plurality of callers waiting in said hold queue.

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27. Cancelled.

28. The computer program product for estimating wait times within a hold queue according to claim 25, further comprising:

means, recorded on said recording medium, for controlling output of said wait time to an interface selected by said caller.

29. The computer program product for estimating wait times within a hold queue according to claim 28, wherein said means for publishing said wait time further comprises:

means, recorded on said recording medium, for controlling output of a plurality of criteria utilized to estimated said plurality of call times.

30. The computer program product for estimating wait times within a hold queue according to claim 25, further comprising:

means, recorded on said recording medium, for updating at least one caller profile server according to a session for said particular call according to said authenticated identifier for said particular caller, wherein said at least one caller profile server maintains a plurality of caller profiles stored according to a plurality of authenticated identifiers for compiling information about sessions at at least one call center.

31. A method for monitoring caller on hold characteristics, comprising:

receiving, at a caller profile server, monitored on hold characteristics according to an authenticated caller identifier of a caller from at least one call center at which said caller has waited in a hold queue from among a plurality of call centers communicatively connected to said caller profile server;

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computing, at said caller profile server, on hold statistics for said caller across at least one from among said plurality of call centers from said monitored on hold characteristics in said caller profile maintained in association with said authenticated caller identifier;

responsive to receiving a request for said caller profile according to said authenticated caller identifier at said caller profile server, distributing said computed on hold statistics for said caller, such that each of said plurality of call centers is independently enabled to estimate wait times within a hold queue comprising said caller based on said on hold statistics.

32. A system for monitoring caller on hold characteristics, comprising:

a caller profile server communicatively connected to a plurality of call centers;

said caller profile server further comprising:

means for receiving monitored on hold characteristics according to an authenticated caller identifier of a caller from at least one call center at which said caller has waited in a hold queue from among said plurality of call centers;

means for computing on hold statistics for said caller across at least one from among said plurality of call centers from said monitored on hold characteristics in said caller profile maintained in association with said authenticated caller identifier; and

means, responsive to receiving a request for said authenticated caller profile according to said caller identifier, for distributing said computed on hold statistics for said caller.

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33. A computer program product for monitoring caller on hold characteristics, said computer program product comprising:

a recording medium;

means, recorded on said recording medium, for enabling receipt of monitored on hold characteristics according to an authenticated caller identifier of a caller from at least one call center at which said caller has waited in a hold queue;

means, recorded on said recording medium, for computing on hold statistics for said caller across said at least one call center from said monitored on hold characteristics in said caller profile maintained in association with said authenticated caller identifier;  
and

means, recorded on said recording medium, for distributing said computed on hold statistics for said caller.

34. The method according to claim 1 for estimating wait times within a hold queue wherein each said authenticated caller identifier is voice authenticated.

35. The system according to claim 14 for estimating wait times within a hold queue wherein each said authenticated caller identifier is voice authenticated.

36. The computer program product according to claim 25 for estimating wait times within a hold queue wherein each said authenticated caller identifier is voice authenticated.

37. The method according to claim 31 for monitoring on hold characteristics, wherein said authenticated caller identifier comprises an identifier for a device which compares a current voice sample provided by said caller with a previously stored voice sample for said caller to authenticate an identity of said caller.

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38. The method according to claim 31 for monitoring on hold characteristics, wherein said on hold statistics specify on hold activity statistics of a caller accumulated from participation in on hold activities comprising at least one from among idleness, participation in surveys, participation in competitions, listening to music, and accessing a third party service.

39. The method according to claim 31 for monitoring on hold characteristics, further comprising:

receiving said request for said caller profile according to said authenticated caller identifier at said caller profile server via a media gateway, wherein said caller profile server is accessible within an internet based network that interfaces with said plurality of call centers which are accessible within a telephony network through said media gateway, wherein said media gateway supports a plurality of protocols for communication between said internet based network and said telephony network.

40. The system according to claim 32 for monitoring on hold characteristics, wherein said authenticated caller identifier comprises an identifier for a device through which compares a current voice sample provided by said caller with a previously stored voice sample for said caller to authenticate an identity of said caller.

41. The system according to claim 32 for monitoring on hold characteristics, wherein said on hold statistics specify on hold activity statistics of a caller accumulated from participation in on hold activities comprising at least one from among idleness, participation in surveys, participation in competitions, listening to music, and accessing a third party service.

42. The system according to claim 32 for monitoring on hold characteristics, further comprising:

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a media gateway through which said caller profile server is communicatively connected to said plurality of call centers, wherein said caller profile server is accessible within an internet based network that interfaces with said plurality of call centers which are accessible within a telephony network through said media gateway, wherein said media gateway supports a plurality of protocols for communication between said internet based network and said telephony network.

43. The computer program product according to claim 33 for monitoring on hold characteristics, further comprising:

means, recorded on said recording medium, for enabling receipt of monitored on hold characteristics according to an authenticated caller identifier of a caller from at least one call center at which said caller has waited in a hold queue, wherein said authenticated caller identifier comprises an identifier for a device which compares a current voice sample provided by said caller with a previously stored voice sample for said caller to authenticate an identity of said caller.

44. The computer program product according to claim 33 for monitoring on hold characteristics, wherein said means, recorded on said recording medium, for computing on hold statistics for said caller across said at least one call center from said monitored on hold characteristics in said caller profile maintained in association with said authenticated caller identifier, further comprises:

means, recorded on said recording medium, for computing said on hold statistics which specify on hold activity statistics of a caller accumulated from participation in on hold activities comprising at least one from among idleness, participation in surveys, participation in competitions, listening to music, and accessing a third party service.

45. The computer program product according to claim 33 for monitoring on hold characteristics, further comprising:



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means, recording on said recording medium, for enabling receipt of said request for said caller profile according to said authenticated caller identifier at said caller profile server via a media gateway, wherein said caller profile server is accessible within an internet based network that interfaces with said plurality of call centers which are accessible within a telephony network through said media gateway, wherein said media gateway supports a plurality of protocols for communication between said internet based network and said telephony network.

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### **IX. Evidence Appendix**

There is no evidence submitted pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner that is relied upon by Appellants in the appeal.

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### **X. Related Proceedings Appendix**

There are no decisions rendered by a court or the Board in any related appeals.